

## REMARKS

The Office Action dated September 19, 2005, has been received and carefully noted. The above amendments and the following remarks are submitted as a full and complete response thereto.

By this Amendment, the drawings, Specification and claims 7 and 10 are amended. No new matter has been added. Claims 1-6 and 11-20 were withdrawn pursuant to an Election of Species Requirement dated May 16, 2005. Accordingly, claims 7-10 are respectfully submitted for consideration. The amendments to the claims do not narrow the scope of the claims but merely clarify the features of the invention previously recited therein.

### Objections to the Drawings

The drawings were objected to for minor informalities. The Office Action stated that some of the reference characters appearing in the figures were not disclosed in the description, and some of the reference characters disclosed in the specification did not appear in the drawings. The Applicants have amended the application as follows:

With respect to the reference character "C" which appears in Fig. 9, the Applicants direct the Examiner's attention to the Brief Description of the Drawings, page 14, line 1, which indicates that Fig. 9c is an enlarged view of the area C of Fig. 9a.

The Office Action stated that the reference character "R" did not appear in the Figures. In the Applicants amendments to the specification, the reference character "R" was deleted.

The Office Action stated that reference characters  $\theta_1$  and  $\theta_2$  were not shown in the Figures. Responsive to the objection, reference characters  $\theta_1$  and  $\theta_2$  are now shown in Figs. 3 and 11.

The Office Action stated that reference characters 16b and 16e were being used to identify both the relief and the modification of the relief. The Applicants respectfully submit that only 16e identifies the relief and 16b identifies the trunnion. The modification of the relief is now indicated with reference numeral 16e' in Figs. 8a and 8b.

The Office Action took the position that the drawings fail to show a "cylindrical housing" recited in claim 7, line 2. In particular, the Office Action took the position that the housing 14, shown in Fig. 1a, is not cylindrical. The Applicants have amended claim 7 responsive to the objection. As such, the Applicants respectfully submit that the drawings, as amended and explained, are in compliance with U.S. patent practice.

### **Objection to the Specification**

The disclosure was also objected to because "relief 16a", on page 22, line 20, should read --relief 16e--. The Applicants have amended the disclosure responsive to the objection and respectfully submit that the disclosure is in compliance with U.S. patent practice.

### **Rejection Under 35 U.S.C. § 112**

Claims 7-10 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Responsive to the rejection, the Applicants have amended claims 7 and 10 and respectfully submit that all claims are in compliance with U.S. patent practice.

### Rejections Under 35 U.S.C. § 102

Claims 7, 9 and 10 were rejected under 35 U.S.C. § 102(b) as being anticipated by Busch et al. (U.S. Patent No. 5,538,473, "Busch"). Claims 9 and 10 depend from claim 7. The Applicants traverse the rejection and respectfully submit that claims 7, 9 and 10 recite subject matter that is neither disclosed nor suggested by Busch.

As a result of the tripod type constant velocity joint according to the present invention, the spherical-to-spherical contact surfaces of the trunnion journal 16b and the inner roller 22 ensure a higher durability. In assembly, the inner roller 22 is tilted in the direction in which the joint axis extends, and not in the direction in which the torque is loaded, which facilitates the fitting of the inner roller onto the trunnion journal without requiring a decrease in the diameter of the neck part of the trunnion journal, which in turn, ensures an increased strength. Thus, the increased durability and the increased strength result in a compact design of the joint. As such, in the present invention, relief portions are formed in the loaded side of the trunnion journal, ensuring an increased strength. The Applicants respectfully submit that the cited references fail to disclose or suggest the claimed features of the invention and thereby fail to provide the critical and non-obvious advantages of the present invention.

Busch discloses a constant velocity universal joint having an outer joint part 1 which, by means of tripod arms 3a, 3b engaging its guiding grooves 10, is in torque connection with an inner joint part 2. A shaft 8 connectable to a drive output end (not illustrated) is inserted into the inner joint part 2. The roller assembly arranged on the

arms 3a consists of an inner roller 4 guided on the arm, a plurality of needle bearings 5, and an outer roller 6. See column 4, lines 1-13 of Busch.

In Busch the inner roller 4 need not be tilted in assembling. A point-contact is established between the inner roller 4 and the tripod arm 3a, causing a higher bearing stress and a lower durability. Fig. 9 of Busch shows such an arrangement, where the spherical inner wall of the inner roller 4 is fitted on the spherical tripod arm 3a. However, no teaching is made of assembling the inner roller by tilting.

With respect to claim 7, the Applicants respectfully submit that Busch fails to disclose or suggest the claimed features of the invention. Claim 7 recites a hollow housing fixed to the end of a first rotary shaft. The Office Action did not identify, and Busch fails to disclose or suggest a first rotary shaft as recited in claim 7. In addition, claim 7 recites a hollow housing formed with axially extending recess grooves opened at one axial end. The Office Action took the position that the guiding grooves 10 in Busch are comparable to the axially extending recess grooves recited in claim 7. In contrast, the guiding grooves 10 in Busch are disposed in an outer joint 1, which is closed at both ends. See Fig. 2 of Busch. As such, Busch fails to disclose or suggest at least the claimed feature of a hollow housing formed with axial extending recess grooves opened at one axial end, as recited in claim 7.

Further, claim 7 recites that each recessed groove comprises guide surfaces contacting the outer peripheral surface of the outer roller and subjected to loads and guide shoulder surfaces for guiding the outer roller axially of the housing. The Office Action took the position that Busch discloses both a guide surfaces and a guide shoulder surface as recited in claim 7, ("each recessed groove consists of guide

surfaces 9 contacting the outer peripheral surface of the outer roller 6 and subjected to loads and guide shoulder surfaces for guiding the outer roller axially of the housing.") See page 5, lines 14-16 of the Office Action. The Applicants respectfully submit, however, that Busch fails to disclose or suggest at least the feature of guide shoulder surfaces for guiding the outer roller axially of the housing, as recited in amended claim 7.

Claims 7, 9 and 10 were rejected under 35 U.S.C. § 102(b) as being anticipated by Sams et al. (U.S. Patent Publication No. 2002/0115491 A1, "Sams"). Claims 9 and 10 depend from claim 7. The Applicants traverse the rejection and respectfully submit that claims 7, 9 and 10 recite subject matter that is neither disclosed nor suggested by Sams.

Sams discloses a CV joint 10 having an outer tripod joint part 12 and an inner spider joint part 14. A set of three longitudinal (axially extending) tracks or races 16 are circumferentially formed within the cavity of the outer joint part 12. See paragraph [0026]. As seen in Figs. 3 and 4, inner spider 14 includes three journals 30 that are circumferentially spaced 120° about a spider body 32. Each journal is provided with a partially spherically shaped roller bearing support surface 34 (trunnion) on its free end. Trunnions 34 are arranged to fit within an inner ring of a roller bearing upon assembly 28. A set of truncated or flattened surface portions 36 are formed in opposing regions of the outer trunnion diameter, so as to provide a grease channel for better lubrication, as well as to facilitate fitting of the roller bearing in a ring about the trunnion during assembly. See paragraph [0027]. The roller bearing assembly includes an outer ring

42, into which a holding ring 44 is pressed. A set of roller bodies 46, such as needle bearings, are positioned within an inner wall of the holding ring. See paragraph [0029].

Claim 7 recites a relief is locally formed along a forged parting line of the trunnion journal, thereby receding a protuberance of the parting line inwardly from the outer peripheral surface of the trunnion journal.

In contrast, Sams discloses flattened surface portions 36 of the trunnion 34 are not located in a loaded surface where a forged parting line occurs, but in a non-loaded surface. As such, Sams fails to disclose or suggest at least the feature of a relief locally formed along a forged parting line of the trunnion journal, as recited in claim 7.

Furthermore, the Applicants respectfully submit that in Sams, the roller has to be tilted in a plane perpendicular to the joint axis when being fitted on the trunnion, and accordingly, the neck part of the trunnion, as viewed in that plane, has to be decreased in order to enable the roller to be fitted onto the journal. This reduces the strength of the trunnion. Increasing the strength by increasing the neck diameter of the journal contradicts the need for compact design of the joint. Accordingly, Sams does not provide the critical and non-obvious advantages of the present invention.

According to U.S. patent practice, a reference must teach every element of a claim in order to properly anticipate the claim under 35 U.S.C. §102. In addition, “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628,631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). “Every element of the claimed invention must be arranged as in the claim. . . . . [t]he identical invention must be shown in as complete detail as is contained in the

patent claim.” Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236 (Fed. Cir. 1989) (emphasis added). Accordingly, Busch and Sams do not anticipate claim 7, nor is claim 7 obvious in view of Busch and Sams. Claims 9 and 10 depend from claim 7 and are allowable for at least the same reasons.

#### **Rejection Under 35 U.S.C. § 103**

Claim 8 was rejected under 35 U.S.C. § 103(a) as being unpatentable over any one of Busch and Sams in view of Kudo et al. (U.S. Patent No. 6,454,655, “Kudo”). Busch and Sams were cited for disclosing many of the claimed elements of the invention, with the exception of the outer diameter of the boss of the tripod at one axial end thereof being chamfered more heavily than at the other end thereof. Kudo was cited for curing this deficiency.

Kudo discloses that the nape section 233 is formed on only one side, along the circumferential direction of the spider boss 226. Therefore, the assembling performance of the trunnion 228a to 228c is not inhibited with respect to the inner roller 142. Thus, it is possible to smoothly assemble the trunnion 228a to 228c to the inner roller 142. See column 16, lines 19-25 of Kudo.

Claim 8 depends from claim 7. As discussed above, Busch and Sams fail to disclose or suggest the features of the invention as recited in claim 7. Kudo fails to cure the deficiencies in Busch and Sams with respect to claim 7, as Kudo fails to disclose or suggest at least the features of a hollow housing formed with axially extending recess grooves opened at one axial end and a relief locally formed along a forged parting line of the trunnion journal, as recited in claim 7.

Under U.S. patent practice, the PTO has the burden under §103 to establish a *prima facie* case of obviousness. In re Fine, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Both the case law of the Federal Circuit and the PTO itself have made clear that where a modification must be made to the prior art to reject or invalidate a claim under §103, there must be a showing of proper motivation to do so. The mere fact that a prior art reference could arguably be modified to meet the claim is insufficient to establish obviousness. The PTO can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. Id. In order to establish obviousness, there must be a suggestion or motivation in the reference to do so. See also In re Gordon, 221 USPQ 1125, 1127 (Fed. Cir. 1984) (prior art could not be turned upside down without motivation to do so); In re Rouffet, 149 F.3d 1350 (Fed. Cir. 1998); In re Dembiczak, 175 F.3d 994 (Fed. Cir. 1999); In re Lee, 277 F.3d 1338 (Fed. Cir. 2002). The Office Action restates the advantages of the present invention to justify the combination of references. There is, however, nothing in the applied references to evidence the desirability of these advantages in the disclosed structure.

In view of the above, the Applicants respectfully submit that the Office Action has failed to establish a *prima facie* case of obviousness for purposes of a rejection of claim 8 under 35 U.S.C. § 103.

### **Conclusion**

Claims 8-10 depend from claim 7 and incorporate the patentable aspects thereof. In view of the arguments above with respect to claims 7-10, the Applicants respectfully

request withdrawal of the objections and rejections, allowance of claims 7-10, and the prompt issuance of a Notice of Allowability.

Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300, **referencing Attorney Dkt. No. 100725-00107.**

Respectfully submitted,



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Enclosures: Amended Drawing Figures Nos. 3, 8a, 8b, and 11  
Petition for Extension of Time (one-month)

TECH/394215.1

**AMENDMENTS TO THE DRAWINGS:**

The Applicants respectfully present herewith replacement Figs. 3, 8a, 8b and 11, which include the desired changes, without markings, and which comply with 37 C.F.R. §1.84. The changes made to Figs. 3, 8a, 8b and 11 are explained in the accompanying remarks section below.